



Information Technology, BS

Concentrations (2021-2022 catalog)

Cloud Computing (CCG) Gateway: *B or higher or XS in or transfer credit for IT 341*

The Cloud Computing (CCG) concentration focuses on the fundamentals of building IT infrastructure on a cloud platform, cloud services management for building, deploying, and maintaining various cloud models, techniques for developing applications to take advantage of availability, security, performance, and scalability of the cloud, creating and using big data analytical environments, building security into cloud platforms, and securely managing and accessing cloud environments. Students will also be able to optimize different services by understanding cloud-based solutions; explore best practices for designing patterns for architecting optimal IT solutions on cloud, deal with cloud architecture challenges such as load balancing, auto scaling, configuration management, caching, adaptive virtualization, on-demand resources provisioning, monitoring, and access control; use the serverless framework, deploy and test serverless application on a cloud platform; design big data cloud environments for performance, security, and cost effectiveness; assign roles to users and groups, audit actions taken, and operations of commonly utilized security services, and apply virtual firewall rules and network access control lists. Employment opportunities for CCG graduates tend to be as Cloud Security Architect (designing and integrating security into cloud build outs) and Cloud Risk Assessment Professional (performing risk assessment with cloud environment build outs), Operational support engineer, Cloud software engineer, System integrator-cloud, Cloud developer, DevOps engineer, Cloud solutions architect, Cloud SysOps Admin.

Cyber Security (CYBR) Gateway *B or higher or XS in or transfer credit for IT 223*

The Cyber Security (CYBR) concentration courses cover concepts such as malware, indicators of compromise, virus signature creation, defense, confidentiality, threats and attacks, the importance of policies, and risk management. Students will be able to learn about information warfare and experiment with "infowar" concepts; laws, crime, forensics, and evidence; technologies used to secure network-enabled applications; how database security and application security relate to industrial control and SCADA systems; as well as the cutting edge in application security issues to include secure database design, OAuth, and secure coding; principles of FISMA certification and accreditation; technologies for information security and the legal, social, business, and personal impacts of IT; cryptographic algorithms, analysis of network data, security at different network layers, and secure e-commerce; and selection and implementation of network security technologies and defending against real-world attacks. Students who focus on Cyber Security can take jobs after graduation such as Help desk analysts, Secure Operations Center Engineers, Information Security Analysts, or Software Quality Assurance Engineers, cyber security analysts, cyber threat intelligence analysts, configuration engineers and system administrators.

Database Technology and Programming (DTP) Gateway: *B or higher or XS in or transfer credit for (IT 214 or IT 194) AND (IT 206 or IT 209 or CS 211)*

The Database Technology and Programming (DTP) concentration covers concepts such as abstraction, modular design, code reuse, graphical user interfaces, database manipulation, indexing techniques, elementary query optimization, data administration, security and privacy, health information exchange, cloud computing, and the layers of the n-tier architecture. Students will also have the opportunity to design, develop, and document event-driven programs using object-oriented language; be exposed to real-world storage networking techniques; develop scalable prototypes; build web applications using available frameworks; and maintain and develop previously deployed applications. Employment opportunities for DTP graduates range from database design/developers, database administrators or programmers, to programmer analysts and software developers.

Health Information Technology (HIT) Gateway: *B or higher or XS in or transfer credit for IT 214*

The Health Information Technology (HIT) concentration focuses on the development of technological solutions to address the specific needs of the healthcare domain. Students will learn about current challenges and problems faced in this domain, specific quality requirements, and how novel technologies can address real world problems, from requirements elicitation and needs assessment to the development and deployment of medical applications. The concentration surveys multiple opportunities for data collection, analysis and visualization, to support diagnosis, epidemiology, and precision medicine solutions. Potential employment opportunities span across hospital settings, pharmaceutical laboratories, and medical clinics. The increasing demands in the job market are driven by the digitalization of hospitals with Electronic Health Records, digital patient profiles, aging of the population, sedentary lifestyles and increasing costs for medical services.

Networking and Telecommunications (NTEL) Gateway: *B or higher or XS in or transfer credit for IT 341*

The Networking and Telecommunications (NTEL) concentration provides the technical knowledge and hands-on experience to students preparing to enter careers in the areas of computer networking, network security, and communications. Once students complete the required courses in this concentration, they have the opportunity to take courses that provide in-depth knowledge in areas of their interest such as wireless and satellite communications, network security, advanced networking principles, peer-to-peer systems, and voice technologies. In addition to the technical education students receive, they will develop the critical thinking and hands-on technical skills, which are essential for a successful career as an IT professional. The syllabi of these courses are aligned with credible certifications in industry such as Network+ and Cisco CCNA. Typical job positions are network operations and management, network design and architecture, network analysis, wireless networking and operations, network security analysis, communications network program management, network administration, network services management.

Web Application Development (WADV) Gateway: *B or higher or XS in or transfer credit for IT 213*

The Web Application Development (WADV) concentration courses cover several different facets of Web development, such as creating Web applications and mobile apps, visualizing information, administrating Web servers, but all of them are hands-on in nature. The typical career path for the WADV concentration is a high-tech role. The majority of the WADV graduates take on positions as Web or mobile developers, full-stack Web application developers, and Web software programmers.